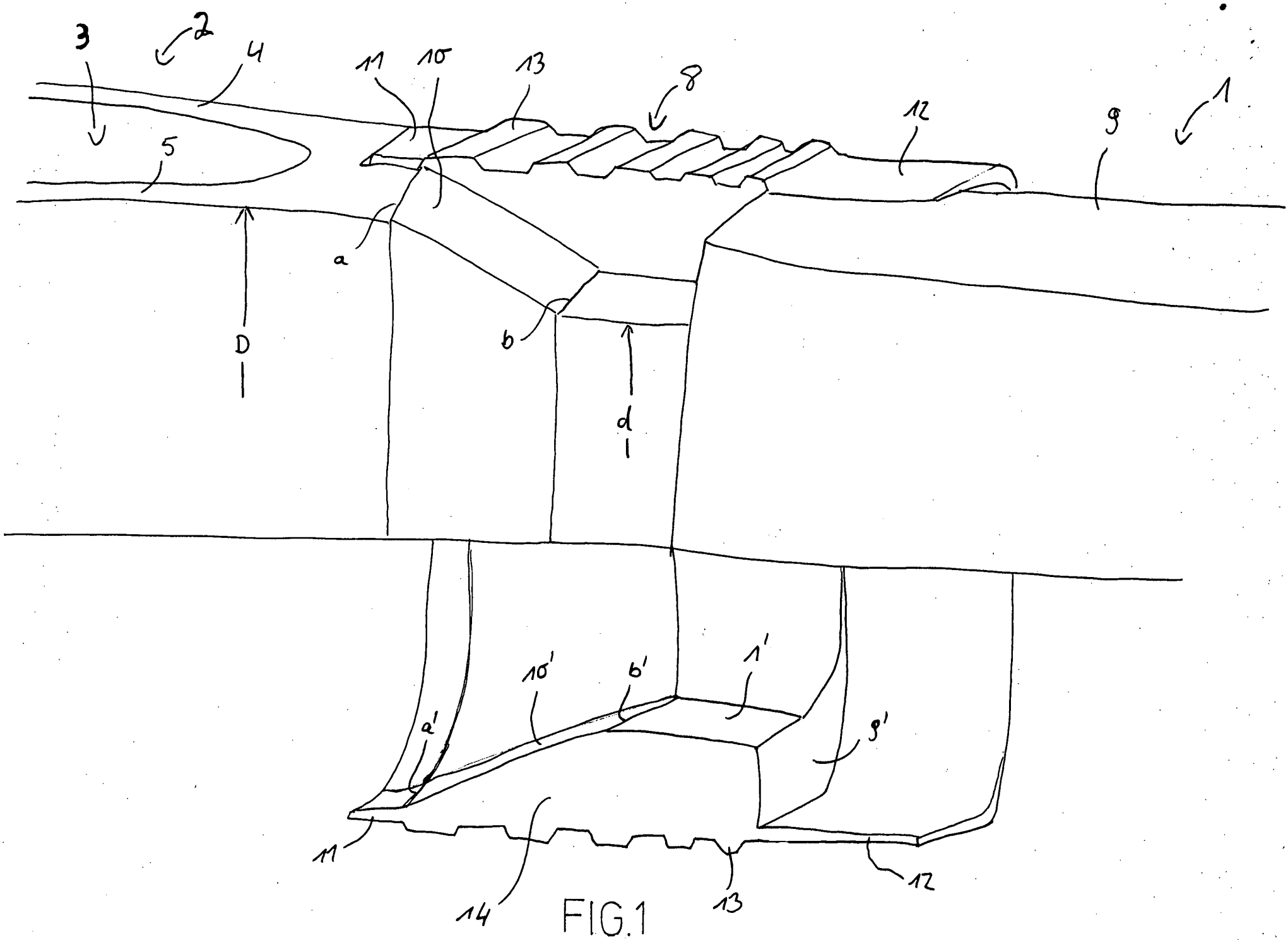


FIG.1

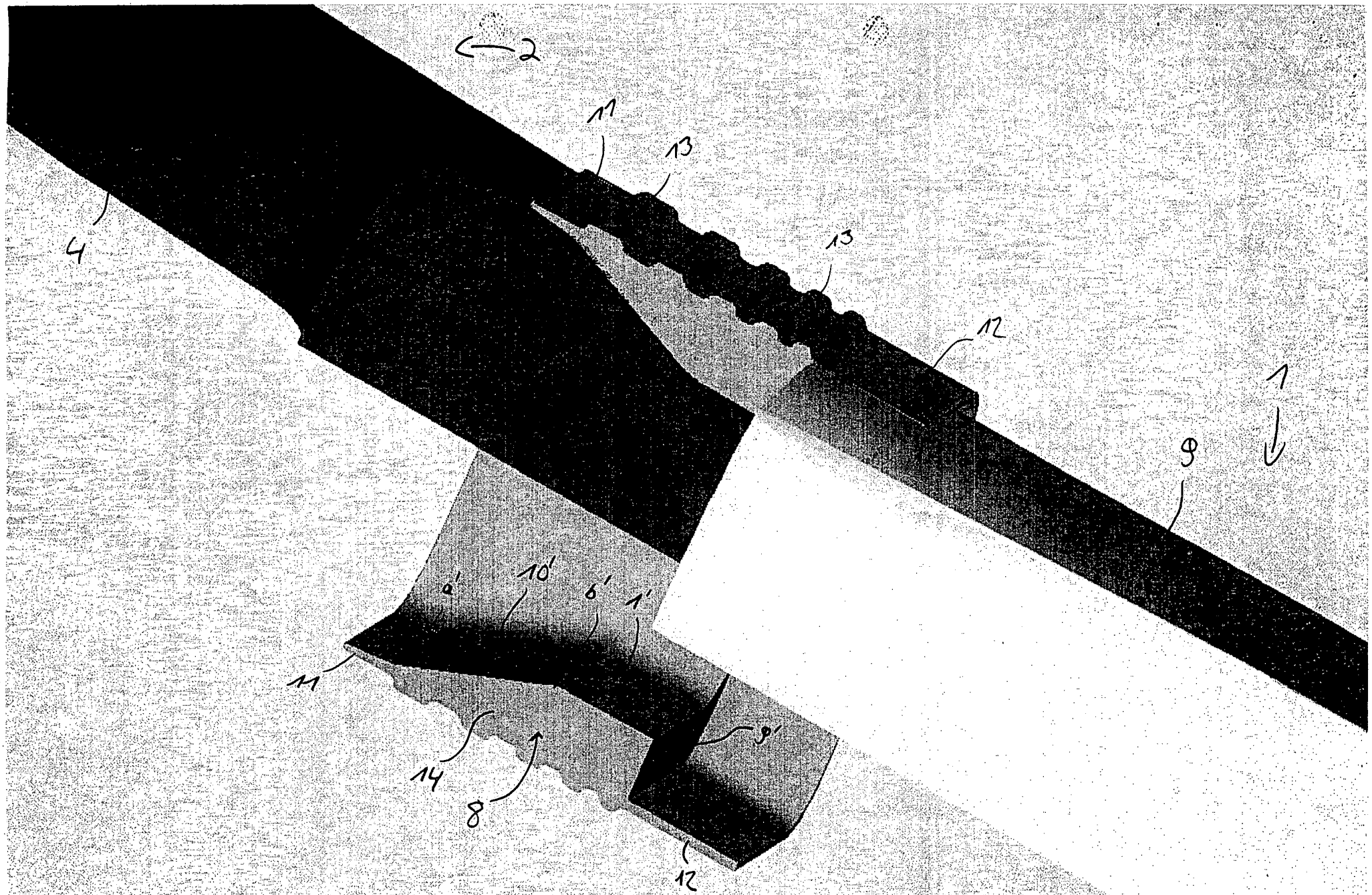


FIG.2

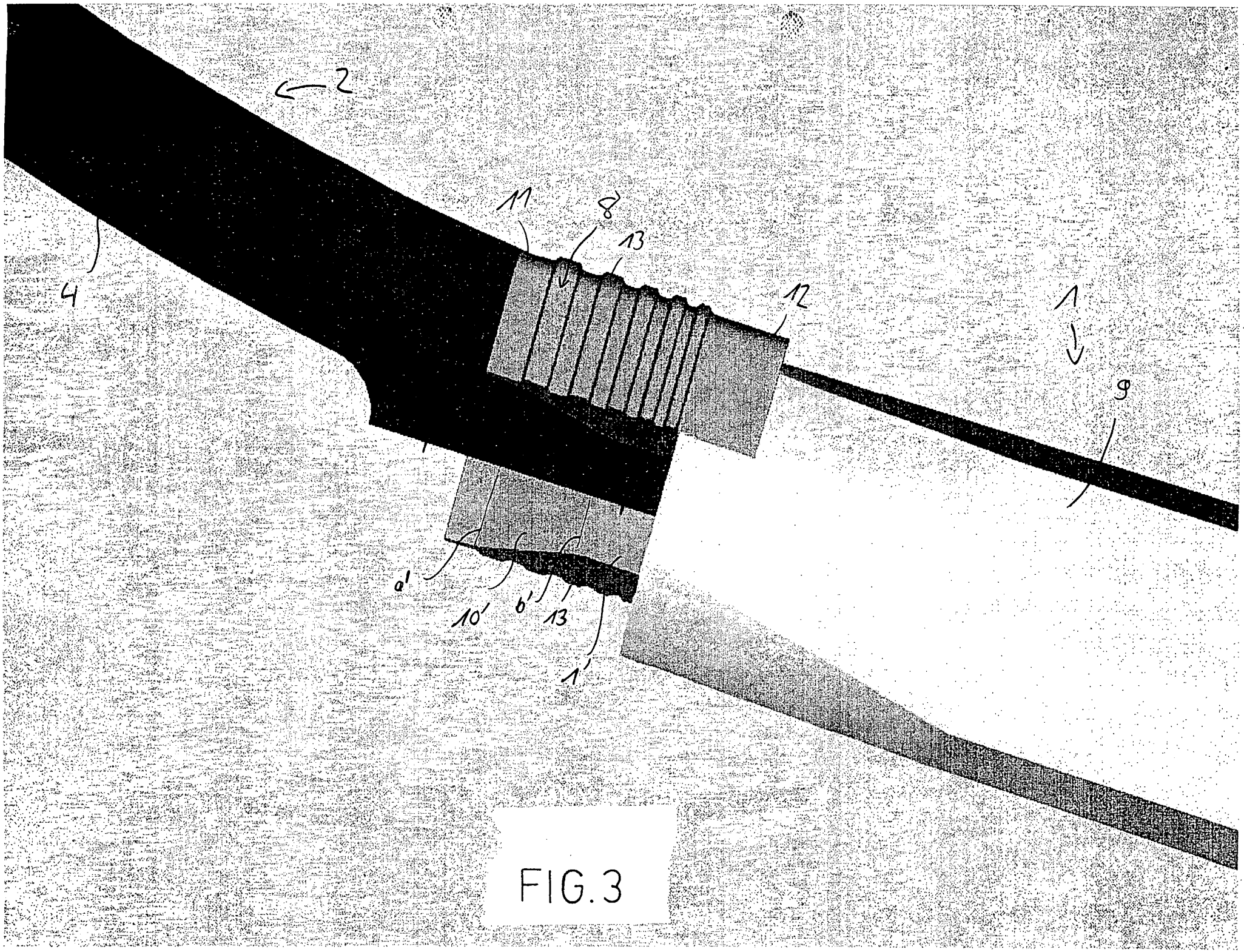


FIG.3

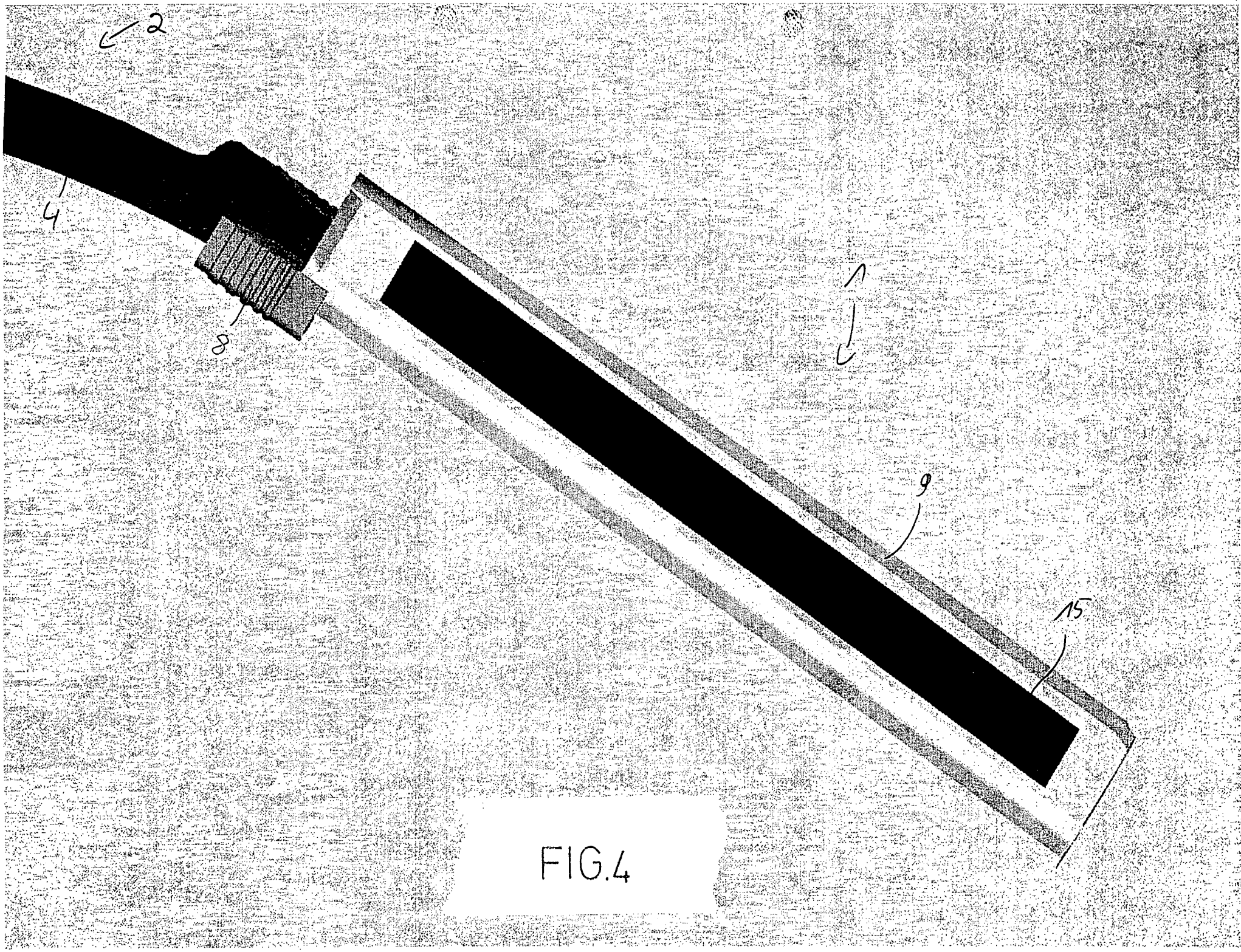


FIG.4

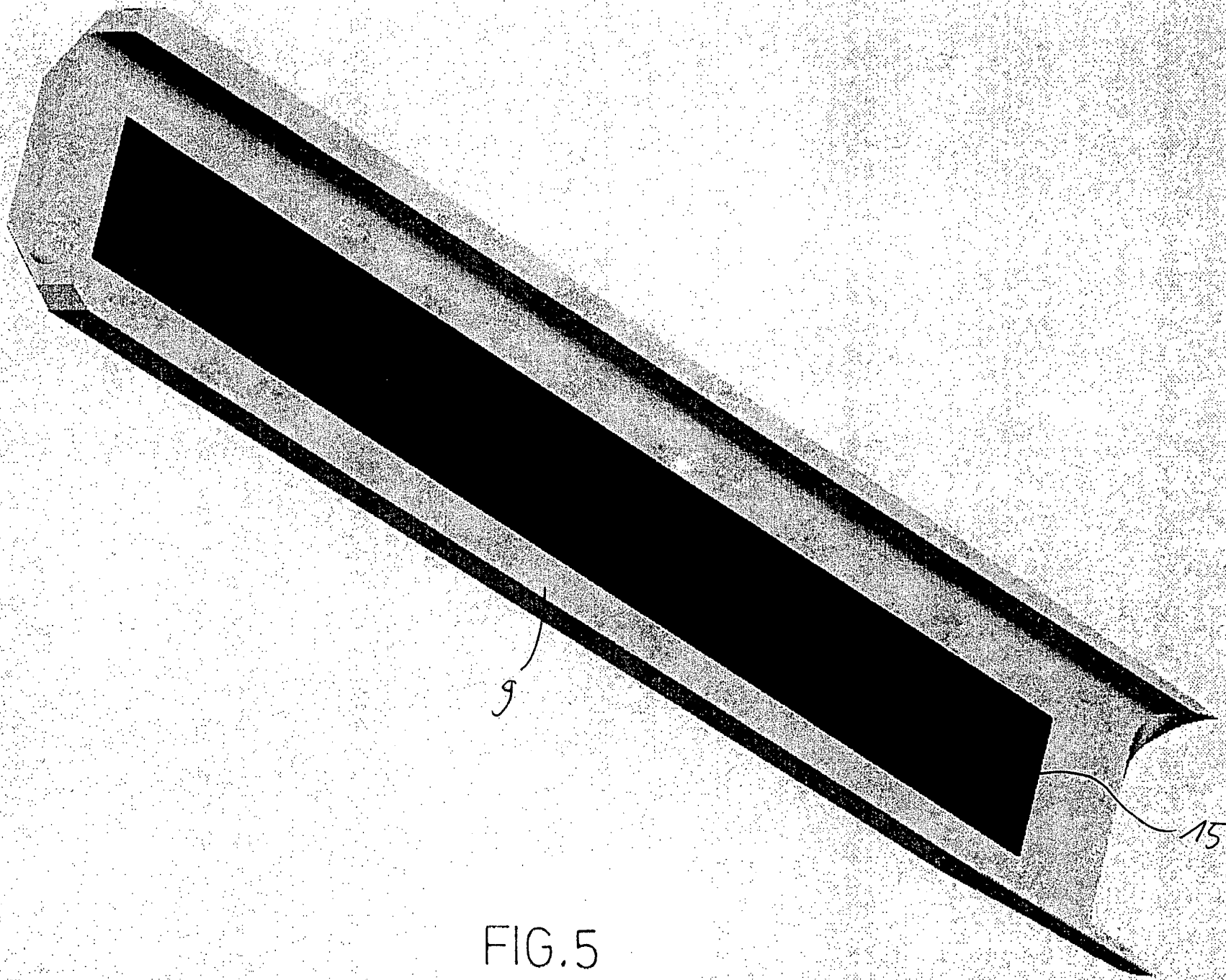


FIG.5

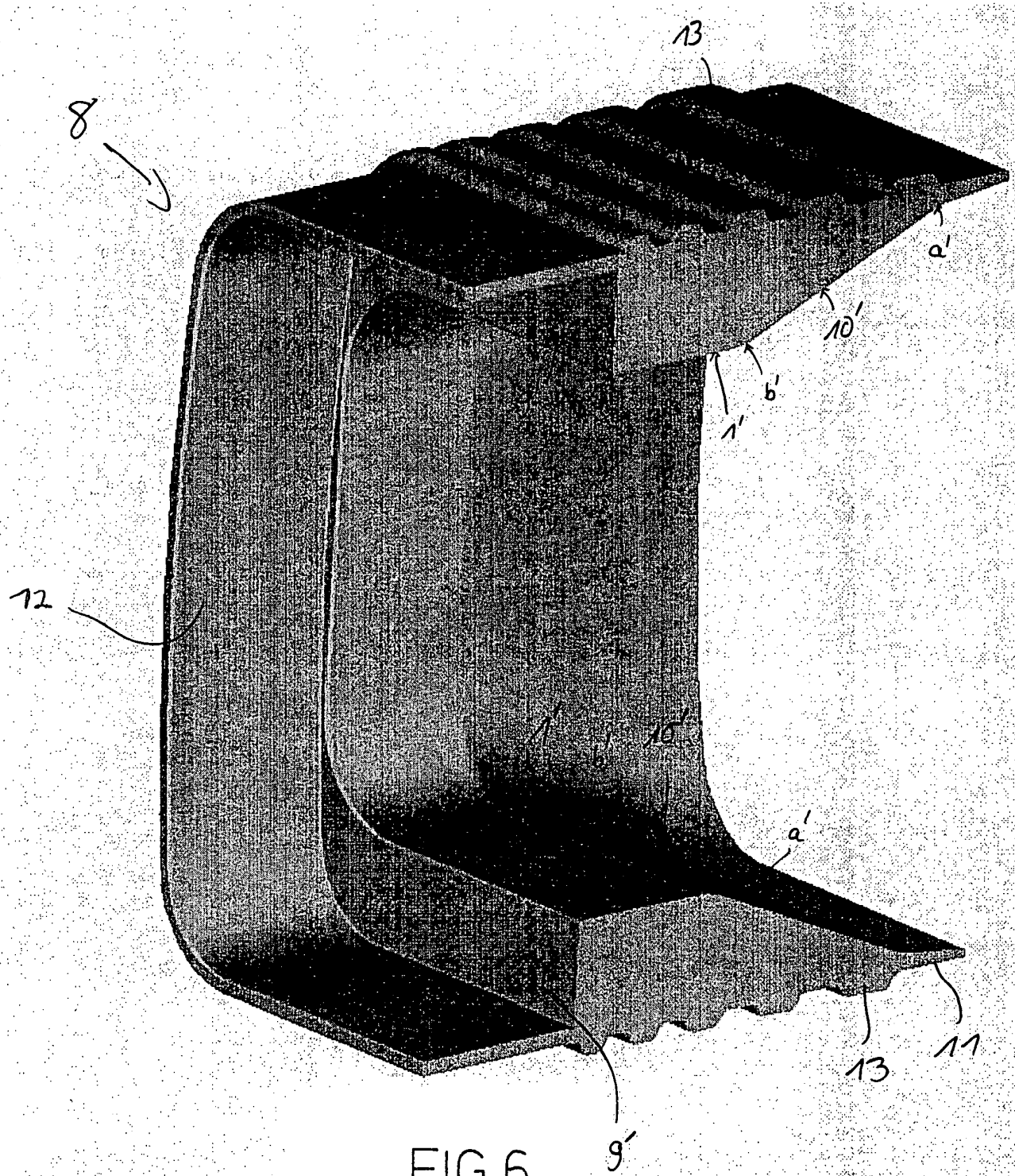
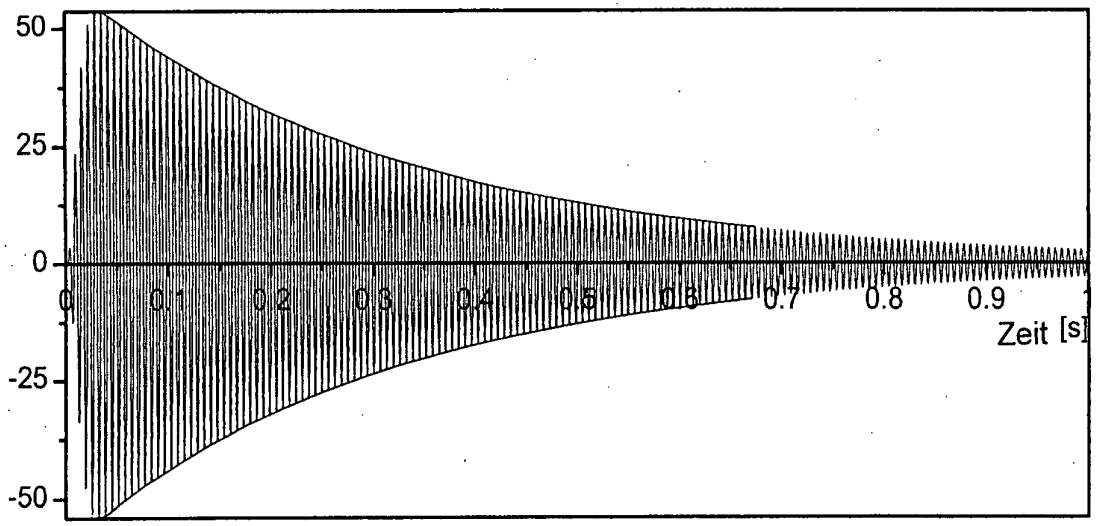


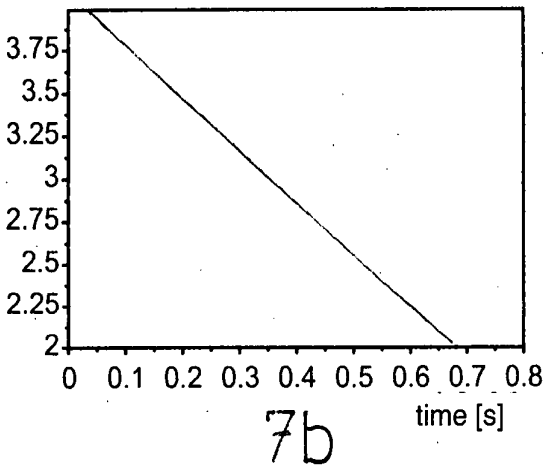
FIG.6



7a

Handle with dampening

dampening ratio, calculated on the basis of a filtered signal



7b

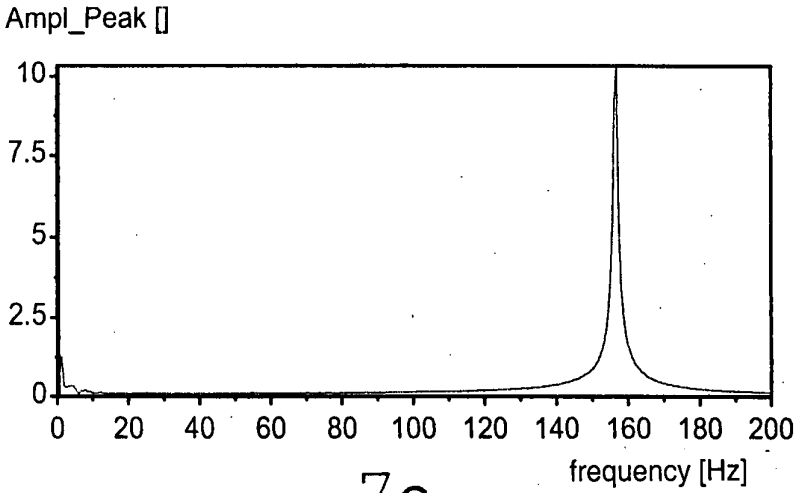
free vibration

natural frequency 156.9 Hz

amplitude 10.34

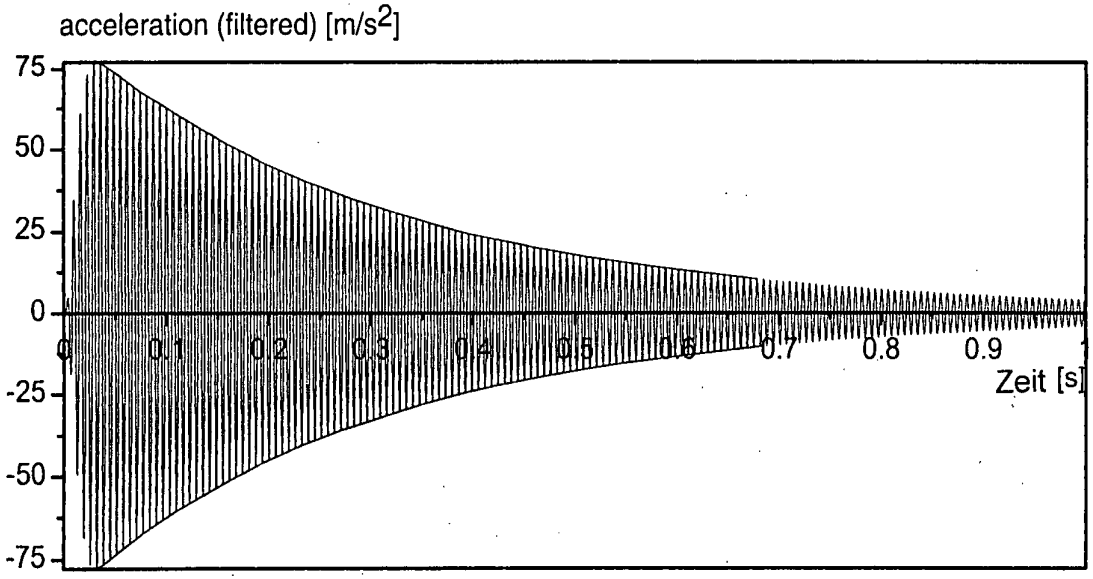
delta = 3.07

dampening ratio = 0.0031



7c

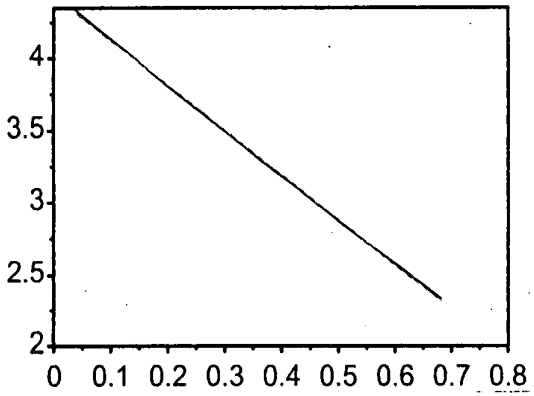
FIG.7



Handle without dampening

8a

dampening ratio, calculated on the basis of a filtered signal



8b

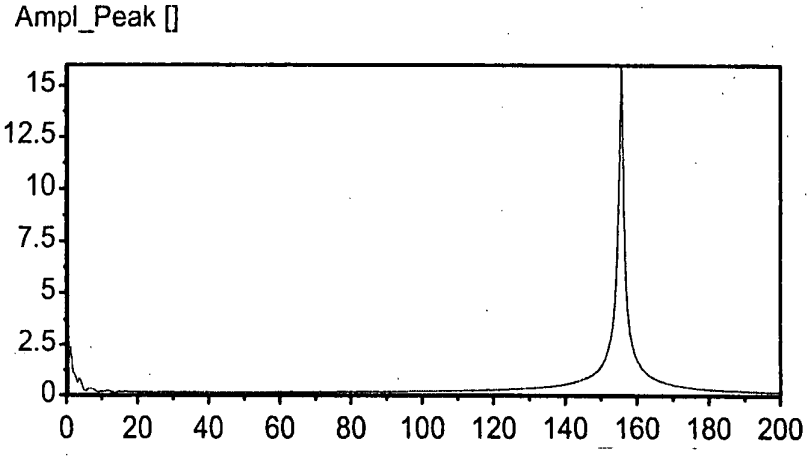
free vibration

natural frequency 155.6 Hz

amplitude 16.04

delta = 3.10

dampening ratio = 0.0032



8c

FIG. 8

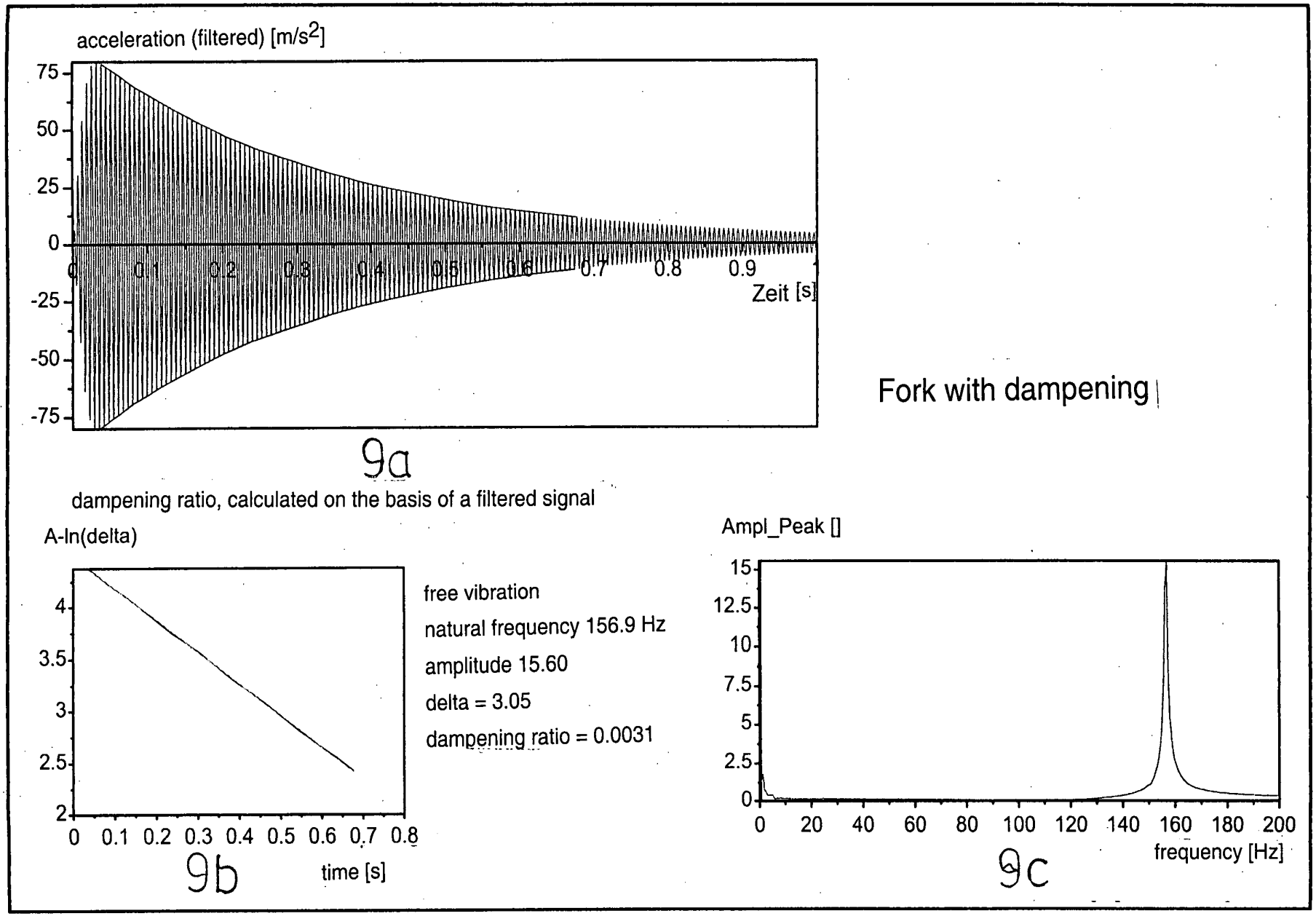
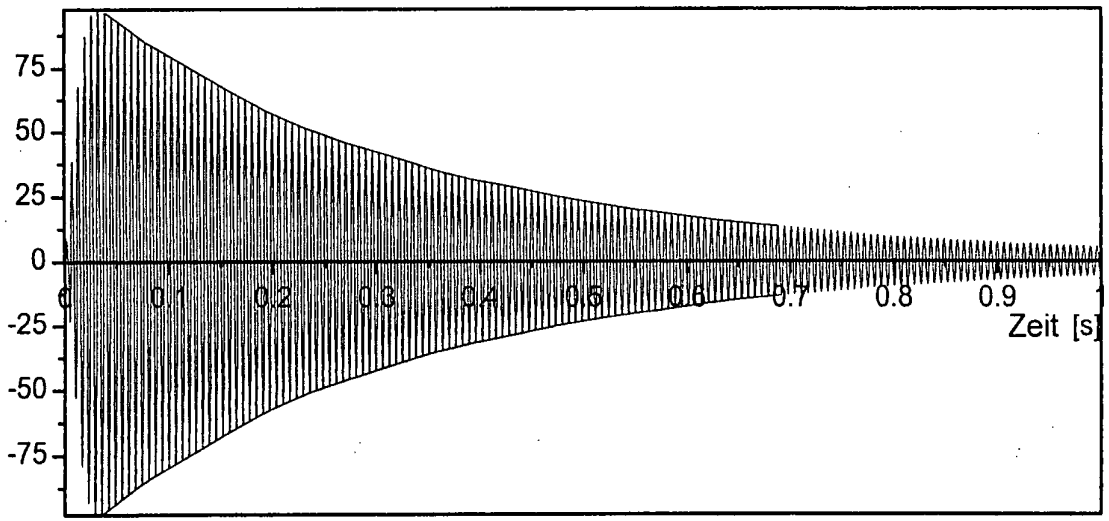

acceleration (filtered) [m/s2]
75
50
25
0
-25
-50
-75
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
Zeit [s]
9a
Fork with dampening
dampening ratio, calculated on the basis of a filtered signal
A-ln(delta)
4
3.5
3
2.5
2
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
time [s]
9b
free vibration
natural frequency 156.9 Hz
amplitude 15.60
delta = 3.05
dampening ratio = 0.0031
Ampl_Peak []
15
12.5
10
7.5
5
2.5
0
0
20
40
60
80
100
120
140
160
180
200
frequency [Hz]
9c

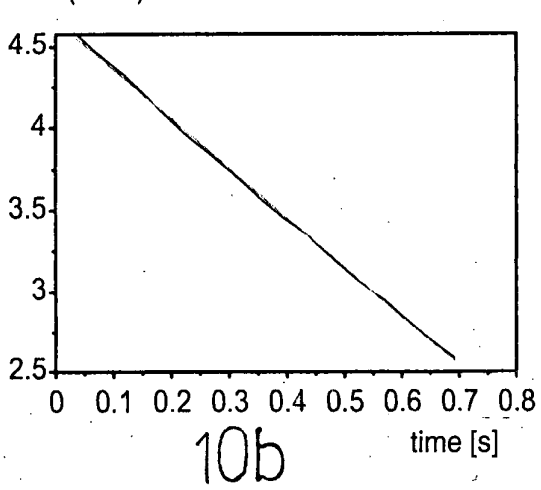
FIG. 9



10a

Fork without dampening

dampening ratio, calculated on the basis of a filtered signal



10b

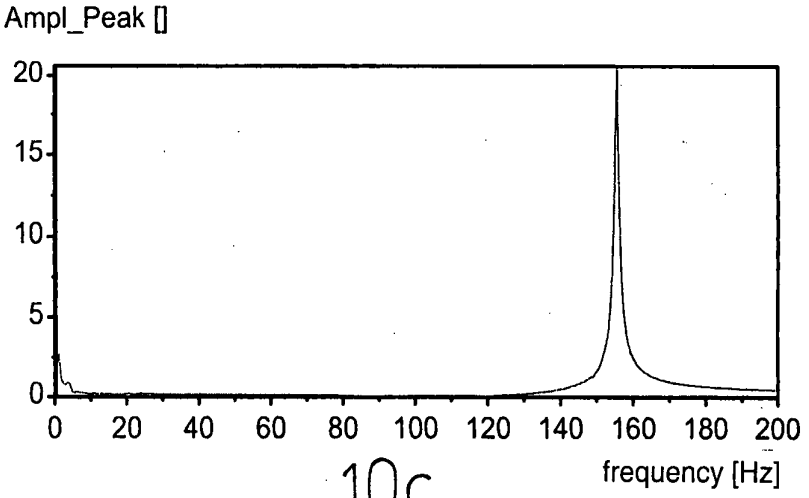
free vibration

natural frequency 155.6 Hz

amplitude 20.62

delta = 3.03

dampening ratio = 0.0031



10c

FIG.10

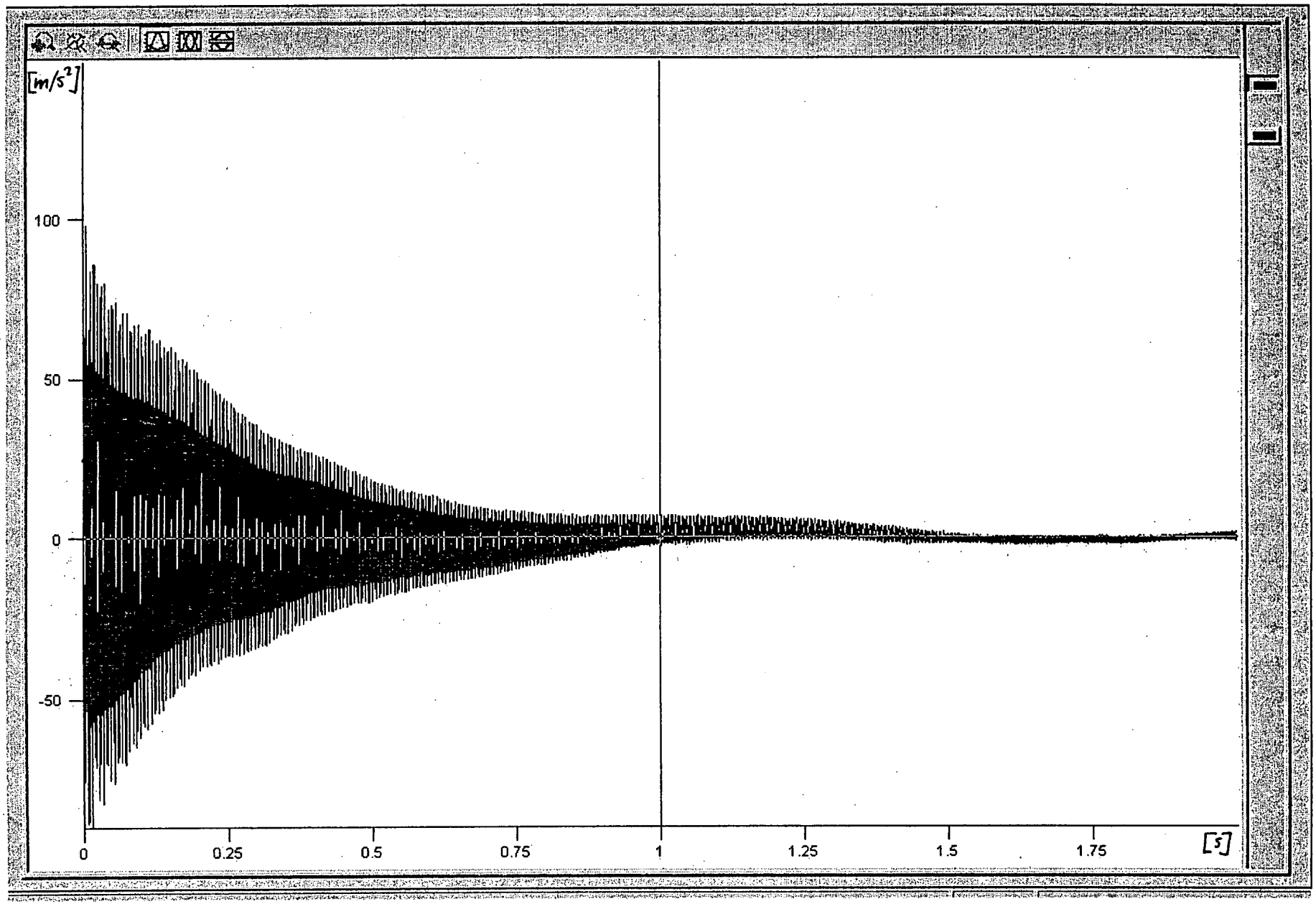


FIG.11